

## Arsenic Treatment Technologies for Small Drinking Water Systems

On October 31, 2001, EPA announced a more stringent standard for arsenic in drinking water of 0.010 milligrams per liter. Water systems must comply with the new standard by January 23, 2006. Nearly 97 percent of the water systems affected by this rule are small water systems that serve fewer than 10,000 people. The primary source of drinking water for these systems is ground water and with very few exceptions, the source of arsenic in the water is natural occurrence. Through the Small Business Innovation Research (SBIR) program, EPA has supported research and development of more cost-effective technologies to help systems remove arsenic from drinking water. Recognizing that the new arsenic rule can be an economic burden to small water systems, the research is focused on developing effective technologies that are also low-cost. Three small firms funded through the SBIR program are currently developing arsenic treatment technologies which may be useful to small drinking water systems needing to comply with the new rule.

ADA Technologies is in the process of demonstrating a compact, simple system for arsenic removal in point of use/point of entry (POU/POE) drinking water systems. The unit combines a highly effective arsenic sorbent with an arsenic-monitoring sensor and alarm to alert the user that the bed requires replacement. The system features ADA Technologies, Inc.'s new amended silicate sorbent material that exhibits long-life and the ability to remove both forms of arsenic that commonly are found in well water.

HydroTech Engineering is working on a technology to reduce arsenic in drinking water at the source or POE, with the added benefit of low-cost disposal of a stable and benign waste product in ordinary landfills or as a concrete additive. Current research has demonstrated arsenic removal of greater than 95 percent with the limestone and limestone-based media. The development of an inexpensive remediation technology that will significantly concentrate the arsenic onto limestone media is anticipated.

VEETech, in conjunction with Lehigh University, is currently testing novel hybrid sorbents (HIXs) for the removal of arsenic from drinking water. The HIXs are polymeric/inorganic hybrid sorbents in which cation exchange resin beads are irreversibly and uniformly coated with hydrated ferric oxide (HFO) materials. The HIXs have demonstrated superior selectivity and capacity over other exchange materials used for removal of arsenic contaminants. Unlike other treatment processes, the HIXs do not require any pre- or post-treatment, and do not alter the quality of the treated water.